


XXXII CONGRESSO NAZIONALE AIRO  
XXXIII CONGRESSO NAZIONALE AIRB  
XII CONGRESSO NAZIONALE AIRO GIOVANI

# AIRO2022

Radioterapia di precisione per un'oncologia innovativa e sostenibile

BOLOGNA, 25-27 NOVEMBRE  
PALAZZO DEI CONGRESSI

 Associazione Italiana  
Radioterapia e Oncologia clinica

 Società Italiana di Radiobiologia

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Radioterapia di precisione per un'oncologia innovativa e sostenibile

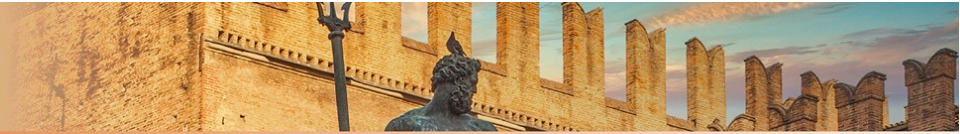
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## FEATURES RADIOMICHE BASATE SULL'IMAGING PET/TC PER PREDIRE GLI OUTCOMES CLINICI NEL TUMORE DEL PANCREAS LOCALMENTE AVANZATO.

GABRIELE D'ERCOLE

RADIOTERAPIA ONCOLOGICA, UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA



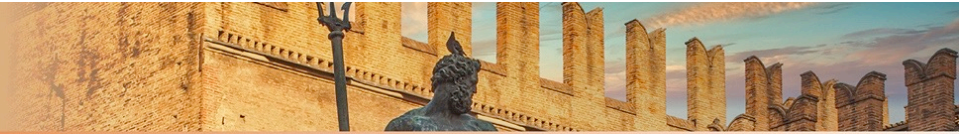


## DICHIARAZIONE

### Relatore: Gabriele D'Ercole

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

- Posizione di dipendente in aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- Consulenza ad aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- Partecipazione ad Advisory Board (NIENTE DA DICHIARARE)
- Titolarità di brevetti in compartecipazione ad aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- Partecipazioni azionarie in aziende con interessi commerciali in campo sanitario (NIENTE DA DICHIARARE)
- Altro (NIENTE DA DICHIARARE)



## PET/CT-based **radiomic biomarkers** to predict early progression in patients with locally advanced pancreatic cancer

Tissue biomarker



Deepest characterization  
 Low temporal resolution  
 Limited # of lesions  
 Low spatial resolution

Blood biomarker

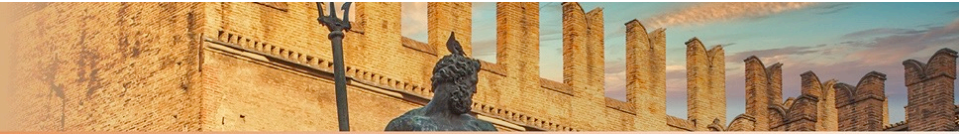


Deep characterization  
 High temporal resolution  
 Mix of all lesions  
 No spatial resolution

Radiomics biomarker



Imaging surrogates  
 High temporal resolution  
 All lesions individually  
 High spatial resolution



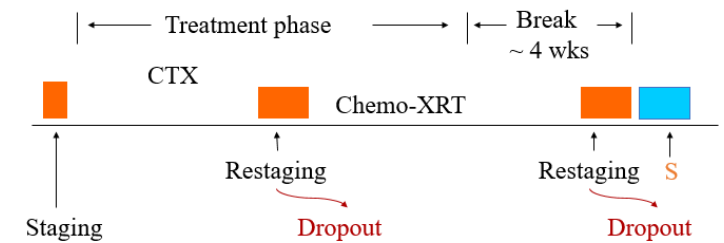
## 57 Patients



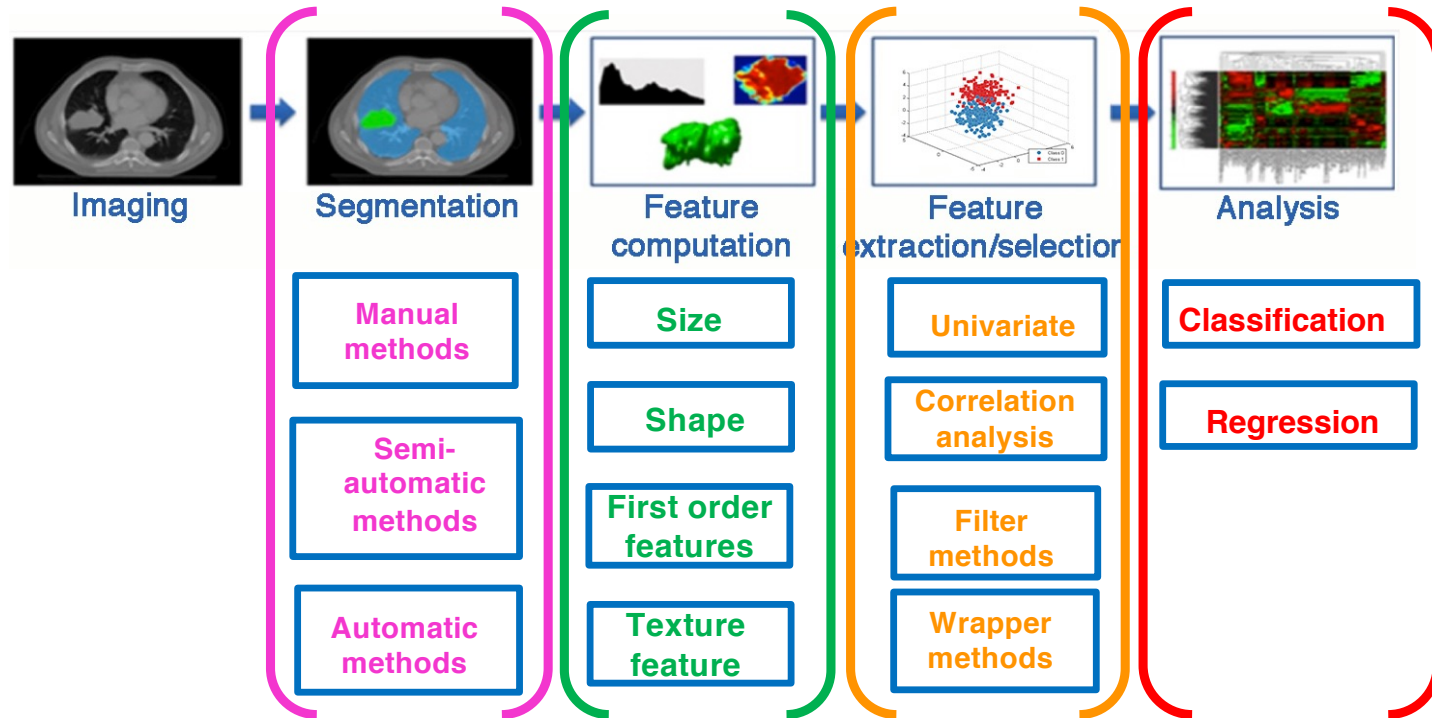
Age	63.9 (Mean)	(Range 40-75)	%
Sex	M	24	42.1
	F	33	57.9
Location	Body	5	8.8
	Head	40	70.2
	Tail	12	21
Staging	IB	2	3.5
	IIA	9	15.8
	IIB	11	19.3
	III	35	61.4
Status	Borderline	18	31.6
	Unresectable	39	68.4

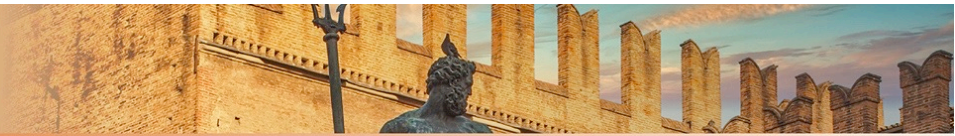
- Good PS (PS ECOG 0-1)
- Hystologically confirmed adenocarcinoma
- Age (18-75)
- stage IB-III borderline resectable or unresectable
- Multidisciplinary discussion

### Campus Bio-Medico Treatment Approach

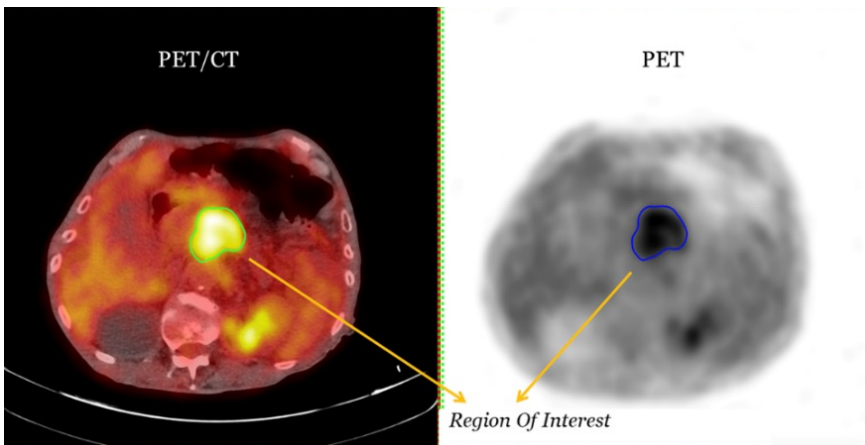


## Radiomic workflow

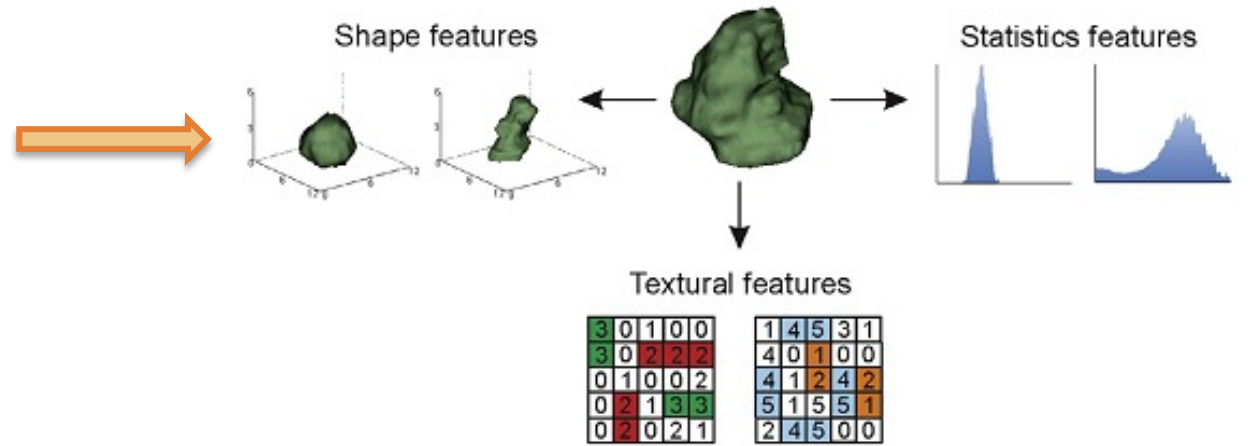




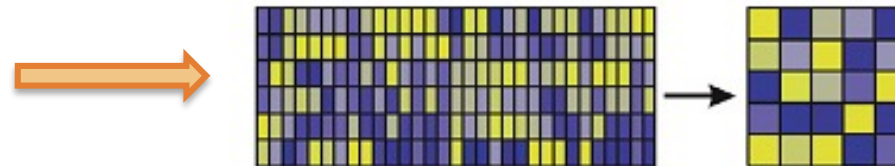
## Segmentation on Pre-treatment 18F FDG

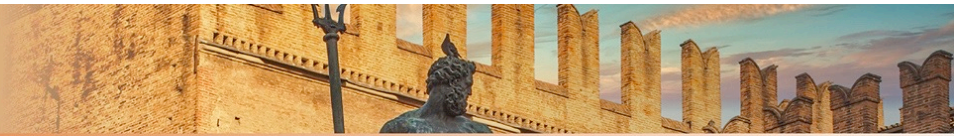


## Feature computation, extraction and...



...selection





## Analysis of:

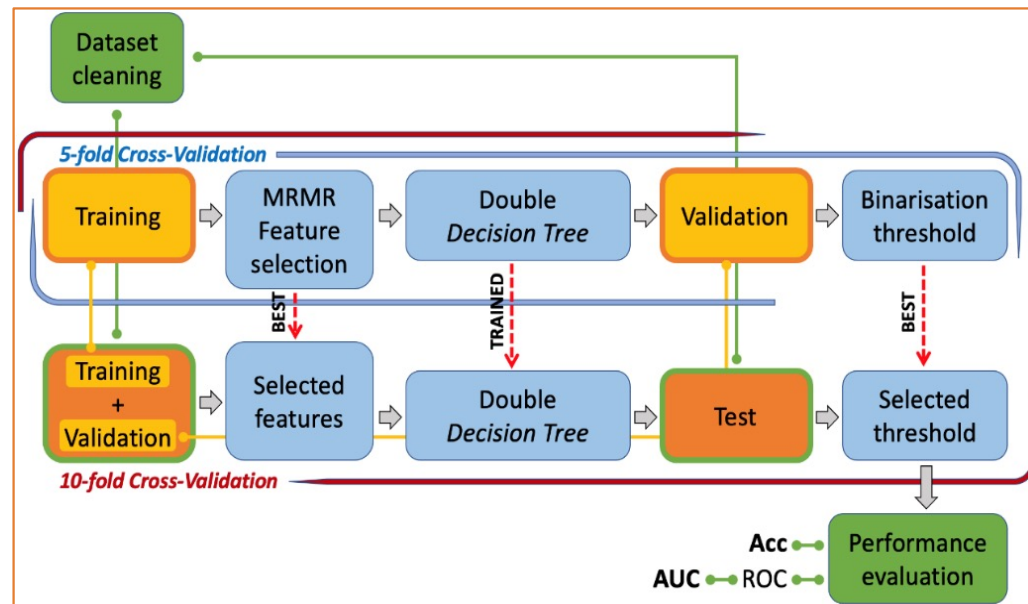
Clinical features (x15)  
 +  
 Extracted and selected features  
 (12x statistical  
 230x textural)



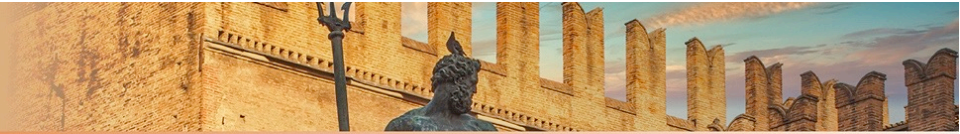
data are **correlated** with  
 with a binary parameter:

- Early progression: **YES**
- Early progression: **NO**

## Validation







To the best of our knowledge, this is the first study for feasibility and hypothesis generation of a radiomic strategy to predict **early progression in LAPC** and our data suggests that a specific signature can be identified (AUC 0.83; prediction accuracy 80.7%).

